

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An RF telemetry antenna system for communications between an external programmer and an implantable medical device, said system comprising:

an implantable medical device housing, ~~comprising including~~ a conductive, metal housing portion defining an internal volume and a dielectric housing portion defining an internal volume;

a self-resonating, monopole RF antenna contained within the internal volume defined by said dielectric portion of said medical device housing, said monopole antenna having a free end and connection end; and

an internal transmitter/receiver circuit;

wherein the monopole RF antenna has an elongate form which is folded at least once and conformed inside the internal volume defined by the dielectric housing portion, and

wherein the connection end of the antenna is connected to the transmitter/receiver circuit having a ground reference, which ground reference, in turn, is connected to the metal housing portion that acts as a ground plane.

2. (Original) The system of claim 1, wherein the monopole RF antenna is coupled to the transmitter/receiver circuit that is placed on an internal, printed circuit board.

3. (Original) The system of claim 1, wherein the dielectric housing portion is a biocompatible epoxy and the metal housing portion is titanium.

4. (Original) The system of claim 3, wherein the epoxy has a dielectric constant ξ_r of about 3.6.

5. (Original) The system of claim 1, wherein the antenna elongate form is a conductive wire.

6. (Original) The system of claim 1, wherein the antenna is made from a conductive material from the group consisting of copper, platinum and gold.

7. (Original) The system of claim 6, wherein the antenna is formed from copper wire that is 20 AWG.

8. (Original) The system of claim 1, wherein the antenna elongate form is a conductive strip.

9. (Original) The system of claim 1, wherein the RF monopole antenna is folded within the dielectric housing portion to provide maximum separation between the folded monopole antenna and the metal housing portion.

10. (Original) The system of claim 9, wherein the folded monopole antenna is formed into a shape comprising a first arc and second arc,

wherein the first arc is in a first plane and the second arc is in a second plane, which planes are substantially parallel to each other.

11. (Original) The system of claim 1, wherein the RF monopole antenna is sized to provide an antenna self-resonance frequency of about 403.5 MHz.

12. (Original) The system of claim 1, wherein the dielectric housing portion is a portion of a substantially flat, elliptical cylinder.

13. (Currently Amended) An RF telemetry antenna for communications between an external programmer and an implantable medical device including a housing with a metal housing portion defining an internal volume and a dielectric housing portion defining an internal volume, said antenna comprising:

a self-resonating, monopole RF antenna included in the medical device, said monopole antenna having a free end and a connection end;

wherein the monopole RF antenna has an elongate form which is folded at least once and conformed inside a inside the internal volume defined by the dielectric housing portion, and said connection end of the antenna is connected to an internal transmitter/receiver circuit having a ground reference, which ground reference, in turn, is connected to a to the metal housing portion which acts as a ground plane.

14. (Original) The antenna of claim 13, wherein the transmitter/receiver circuit is placed on an internal printed circuit board.

15. (Original) The antenna of claim 13, wherein the antenna elongate form is a conductive wire.

16. (Original) The antenna of claim 13, wherein the antenna is made from a conductive material from the group consisting of copper, platinum and gold.

17. (Original) The antenna of claim 16, wherein the antenna is formed from copper wire that is 20 AWG.

18. (Original) The antenna of claim 13, wherein the antenna elongate form is a conductive strip.

19. (Original) The antenna of claim 13, wherein the RF monopole antenna is folded within the dielectric housing portion to provide maximum separation between the folded monopole antenna and the metal housing portion.

20. (Original) The antenna of claim 19,
wherein the folded monopole antenna is formed into a shape comprising a first arc and a second arc,
wherein the first arc is in a first plane and the second arc is in a second plane, which two planes are substantially parallel to each other.

21. (Original) The antenna of claim 13, wherein the RF monopole antenna is sized to provide an antenna self-resonance frequency of about 403.5 MHz.

22. (Previously Presented) An implantable medical device, comprising:
a housing having a dielectric portion defining an internal volume and a metal portion defining an internal volume;
a transmitter/receiver circuit located within the housing; and
an elongate monopole RF antenna with at least one fold operably connected to the transmitter/receiver circuit and positioned entirely within the dielectric portion internal volume.

23. (Previously Presented) An implantable medical device as claimed in claim 22, wherein the dielectric portion of the housing includes a curved region and the antenna includes first and second arcuate portions that extend along the curved region.

24. (Previously Presented) An implantable medical device as claimed in claim 23, wherein the first and second arcuate portions are in first and second planes and the first and second planes are substantially parallel to one another.

25. (Previously Presented) An implantable medical device as claimed in claim 22, wherein the transmitter/receiver circuit is connected to the metal portion of the housing.

26. (Previously Presented) An implantable medical device as claimed in claim 25, wherein the transmitter/receiver circuit includes a ground reference and the ground reference is connected to the metal portion of the housing.

27. (Previously Presented) An implantable medical device as claimed in claim 22, wherein the antenna comprises one of an elongate conductive wire and an elongate conductive strip.

28. (Previously Presented) An implantable medical device as claimed in claim 22, wherein the housing defines a substantially cylindrical shape having a central axis and the dielectric portion and the metal portion are separated by a plane that is parallel to the central axis.

29. (Previously Presented) An implantable medical device as claimed in claim 22, further comprising:

a spinal cord stimulation circuit within the housing.

30. (New) The system of claim 1, wherein the monopole RF antenna is embedded in the dielectric housing portion.

31. (New) The antenna of claim 13, wherein the antenna is embedded in the dielectric housing portion.

32. (New) An implantable medical device as claimed in claim 22, wherein the elongate monopole RF antenna is embedded in the dielectric portion of the housing.

33. (New) An implantable medical device, comprising:
 - a housing having a dielectric portion defining an internal volume and a metal portion defining an internal volume;
 - a transmitter/receiver circuit, located within the housing, including a ground reference connected to the metal portion of the housing;
 - a tissue stimulation circuit located within housing; and
 - an elongate antenna with at least one fold operably connected to the transmitter/receiver circuit and positioned within the dielectric portion.
34. (New) An implantable medical device as claimed in claim 33, wherein the dielectric portion of the housing includes a curved region and the antenna includes first and second arcuate portions that extend along the curved region.
35. (New) An implantable medical device as claimed in claim 33, wherein the antenna comprises a monopole RF antenna.
36. (New) An implantable medical device as claimed in claim 33, wherein the antenna comprises one of an elongate conductive wire and an elongate conductive strip.
37. (New) An implantable medical device as claimed in claim 33, further comprising:
 - at least one lead connector associated with the dielectric portion and operably connected to the tissue stimulation circuit.
38. (New) An implantable medical device as claimed in claim 33, wherein the antenna is embedded in the dielectric portion of the housing.